

LISTING OF CLAIMS:

The following listing of claims replaces all previous versions, and listings of claims in the present application.

1.-19. (Canceled)

20. (Currently amended) A porous film composed of a polymer material for a non-aqueous electrolyte secondary battery,

wherein:

the polymer material is at least one of the materials or the modified materials thereof, including polybenzimidazole, polyimide, polyether imide, polyamide imide, polyphenylene sulfide, polyether sulfone, polysulfone, polyether ether ketone, polymethyl pentene, aramide, polyvinylidene fluoride, polyamide, polyethylene terephthalate, polybutylene terephthalate, polyethylene naphthalate, polybutylene naphthalate, polyarylate, polyacetal and polyphenylene ether;

the polymer material has a backbone chain and a group; and

~~wherein at least a portion of said~~ the polymer material is modified by a predetermined
~~substituent different from the group contained in said polymer material, said predetermined~~
~~substituent having~~ has at least two successive carbon atoms bonded to the carbon atoms of the
backbone chain ~~of said~~ and is modified by a modifier having a predetermined substituent
different from the group contained in the polymer material.

21. (Currently amended) A ~~The~~ porous film ~~of~~ composed of the polymer material for the
a non-aqueous electrolyte secondary battery, according to claim 20,

wherein:

the modifier is composed of a compound having an unsaturated multiple bond in the molecule thereof;

a LUMO energy of the modifier is not less than 0.3 eV when hydrogen atoms are added to the unsaturated multiple bond; and

a protective layer induced from the modifier is formed on the surface of the polymer material by bonding the unsaturated multiple bond of the modifier to the carbon atoms of the backbone chain ~~a protective layer induced from the modifier having a LUMO energy value of not less than 0.3 eV is formed on the surface of said porous film with the polymerization group open.~~

22. (Canceled)

23. (Currently amended) A ~~The~~ porous film ~~of~~ composed of the polymer material for the a-non-aqueous electrolyte secondary battery, according to claim 21,

wherein said modifier ~~includes at least one~~ is selected from the group consisting of ethylene glycol dimethacrylate, trimethylol propane trimethacrylate, cyclohexyl methacrylate, octafluoro pentyl acrylate, octafluoro pentyl methacrylate, tetrafluoro propyl acrylate, tetrafluoro propyl methacrylate, vinyltris (β -methoxy ethoxy) silane, vinyl triethoxy silane, vinyltrimethoxy silane, γ -(acryloxy propyl) trimethoxy silane, γ -(methacryloxy propyl) trimethoxy silane, γ -(acryloxy propyl) triethoxy silane, and γ -(methacryloxy propyl) triethoxy silane

24. (Currently amended) A ~~The~~ porous film ~~of~~ composed of the polymer material for the a-non-aqueous electrolyte secondary battery, according to claim 20,

wherein:

the modifier is composed of a compound having an unsaturated multiple bond in the molecule thereof;

a HOMO energy of the modifier is not more than -10.1 eV when hydrogen atoms are added to the unsaturated multiple bond; and

a protective layer induced from the modifier is formed on the surface of the polymer material by bonding the unsaturated multiple bond of the modifier to the carbon atoms of the backbone chain ~~a protective layer induced from the modifier having a HOMO energy value of not more than -10.1 eV is formed on the surface of said porous film with the polymerization group open.~~

25. (Canceled)

26. (Currently amended) A ~~The~~ porous film ~~of~~ composed of the polymer material for the a-non-aqueous electrolyte secondary battery, according to claim 24,

wherein said modifier ~~includes at least one~~ is selected from the group consisting of ethylene glycol dimethacrylate, trimethylol propane trimethacrylate, cyclohexyl methacrylate, octafluoro pentyl acrylate, octafluoro pentyl methacrylate, tetrafluoro propyl acrylate, tetrafluoro propyl methacrylate, heptadecafluoro decylacrylate, heptadecafluoro decylmethacrylate, vinyltris (β -methoxy ethoxy) silane, vinyl triethoxy silane, vinyltrimethoxy silane, γ -(acryloxy propyl) trimethoxy silane, and γ -(acryloxy propyl) triethoxy silane.

27. (Currently amended) A ~~The~~ porous film ~~of~~ composed of the polymer material for the a-non-aqueous electrolyte secondary battery, according to claim 20,

wherein said predetermined substituent has a -SiOSi- structure.

28. (Currently amended) ~~A~~ The porous film of composed of the polymer material for the
a-non-aqueous electrolyte secondary battery, according to claim 20,

wherein said predetermined substituent is bonded to a second modifier having a -SiOSi-
structure.

29. - 31. (Canceled)